

CLAIMS:

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1. A method for forming a first-property semiconductor film at a desired position on a substrate, comprising the steps of:

5 a) preparing the substrate having a second-property semiconductor film formed thereon;

b) preparing an optical mask having a predetermined pattern;

c) relatively positioning a projection area of the optical mask at the desired position on the substrate;

10 d) irradiating the desired position of the second-property semiconductor film with laser light through the optical mask to change an irradiated portion of the second-property semiconductor film to the first-property semiconductor film; and

15 e) forming an insulation film on at least the first-property semiconductor film.

2. The method according to claim 1, wherein the substrate has an alignment mark previously formed thereon, wherein the alignment mark is used to position the projected
20 area of the optical mask in the step (c).

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3. The method according to claim 1, wherein the optical

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mask has an alignment mark pattern, wherein, in the step (d),
an alignment mark corresponding to the alignment mark pattern
is formed, wherein the alignment mark is visible due to a
difference in optical characteristic between the first-
5 property semiconductor film and the second-property
semiconductor film.

4. The method according to claim 3, wherein a
positioning process after the step (d) is performed with
reference to the alignment mark.

10 5. The method according to claim 1, wherein the
first-property semiconductor film is a single-crystal
semiconductor film and the second-property semiconductor film
is an amorphous semiconductor film.

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15 6. The method according to claim 3, wherein the
first-property semiconductor film is a crystalline
semiconductor film and the second-property semiconductor film
is an amorphous semiconductor film.

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20 7. A method for forming a crystalline semiconductor
film at a desired position on a substrate, comprising the steps
of:

a) preparing the substrate having an amorphous
semiconductor film formed thereon;

b) preparing an optical mask having a predetermined pattern;

c) relatively positioning a projection area of the optical mask at the desired position on the substrate;

5 d) irradiating the desired position of the amorphous semiconductor film with laser light through the optical mask to change an irradiated portion of the amorphous semiconductor film to the crystalline semiconductor film; and

e) forming an insulation film on at least the
10 crystalline semiconductor film.

8. The method according to claim 7, further comprising the step of:

15 f) forming an island comprised of the insulation film and the crystalline semiconductor film by a patterning process, wherein the crystalline semiconductor film of the island is a single-crystal semiconductor film used for source, drain, and channel regions of a field effect transistor.

9. The method according to claim 7, wherein the substrate has an alignment mark previously formed thereon.
20 wherein the alignment mark is used to position the projected area of the optical mask in the step (c).

10. The method according to claim 7, wherein the optical mask has an alignment mark pattern, wherein, in the step (d),

an alignment mark corresponding to the alignment mark pattern is formed, wherein the alignment mark is visible due to a difference in optical characteristic between the crystalline semiconductor film and the amorphous semiconductor film.

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11. A semiconductor film structure comprising:
- a substrate;
- a semiconductor layer on the substrate, having a first-property semiconductor region formed at a desired position on a substrate and a second-property semiconductor region, wherein the first-property semiconductor region is formed by irradiating the desired position of a second-property semiconductor film with laser light to change an irradiated portion of the second-property semiconductor film to the first-property semiconductor region; and
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- 15 an insulation layer formed on the semiconductor layer.
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12. The semiconductor film structure according to claim 11, wherein a laminated layer consisting of the semiconductor layer and the insulation layer is partly removed to produce at least one island of the laminated layer on the substrate.

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13. The semiconductor film structure according to claim 11, wherein an optical characteristic of the first-property semiconductor film is different from that of the second-

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5 the desired position.